CLAIMS

1. A method of rendering a glyph to make the glyph more readable, comprising:

receiving a glyph associated with a font, the glyph to be rendered at a size;

calculating a set of initial density values to provide one density value for each of a set of device pixels to represent the glyph;

calculating an initial adjustment value for the glyph;

for one or more of the device pixels in the set of device pixels, calculating a length of an edge of the glyph that passes through the device pixel; and

for one or more of the device pixels, adjusting the initial density value of the device pixel by a final adjustment value, the final adjustment value based upon the initial adjustment value and the length of the edge of the glyph passing through the device pixel.

2. The method of claim 1, wherein calculating an initial adjustment value comprises:

determining a standard stem width for the font;

calculating a scaled stem width from the standard stem width and the size; and

determining an initial adjustment value based on the scaled stem width.

3. The method of claim 1, wherein calculating an initial adjustment value comprises:

determining a horizontal standard stem width and a vertical standard stem width for the font;

calculating a horizontal scaled stem width from the horizontal standard stem width and the size and calculating a vertical scaled stem width from the vertical standard stem width and the size;

determining a horizontal initial adjustment value based on the horizontal scaled stem width and determining a vertical initial adjustment value based on the vertical scaled stem width; and

wherein the final adjustment value is based upon the horizontal initial adjustment value, the vertical initial adjustment and the horizontal and vertical lengths of the edge of the glyph passing through the device pixel.

4. The method of claim 1, wherein for a stroke of the glyph that is to be asymmetrically adjusted, calculating an initial adjustment value comprises:

determining a standard stem width for the font;

calculating a scaled stem width from the standard stem width and the size; and

determining an initial adjustment value for a subset of device pixels forming an edge of the stroke based on the scaled stem width and the initial density values of the subset of device pixels.

5. The method of claim 1, wherein calculating a length of an edge of the glyph that passes through the device pixel comprises:

rendering a high resolution bitmap representation of the glyph, the bitmap being representative of the initial density values; and

identifying initial adjustment pixels along the edges of the high resolution bitmap representation of the glyph, the initial adjustment pixels being high resolution pixels representative of the initial adjustment value of the glyph;

wherein the length of the edge of the glyph that passes through a device pixel is a ratio of the number of initial adjustment pixels in a direction to a grid ratio in a corresponding direction.

6. The method of claim 5, wherein the glyph is to be rendered without carrying adjustment in a y direction and wherein the identifying initial adjustment pixels step includes not identifying initial adjustment pixels along an edge of the high resolution bitmap that coincides with a device pixel boundary in the y direction.

7. The method of claim 5, wherein identifying initial adjustment pixels along the edges of the high resolution bitmap includes identifying initial adjustment pixels in a neighboring device pixel to a device pixel having an initial density value equal to a maximum density value, where the neighboring device pixel has an initial density value of zero, the method further comprising:

calculating a length of an edge of the glyph that passes through the neighboring device pixel; and

adjusting the initial density value of the neighboring device pixel by a final adjustment value, the final adjustment value based on the initial adjustment value and the length of the edge passing through the neighboring device pixel.

8. The method of claim 1, wherein the font is a Type 1 font.

9. The method of claim 1, wherein the font is a TrueType font.

10. A method of rendering a stroke, comprising:

receiving a path representing a stroke to be rendered at a given stroke width;

calculating a set of initial density values to provide one density value for each of a set of device pixels to represent the stroke;

calculating an initial adjustment value for the stroke;

for one or more of the device pixels in the set of device pixels, calculating a length of an edge of the stroke that passes through the device pixel; and

for one or more of the device pixels, adjusting the initial density value of the device pixel by a final adjustment value, the final adjustment value based upon the initial adjustment value and the length of the edge of the stroke passing through the device pixel.

11. A computer-implemented method, comprising:

receiving a plurality of glyphs to be rendered; and

for each glyph, before rasterizing a representation of the glyph, using a scaled stem width of the glyph to select a rendering policy for rendering the glyph.

12. The method of claim 11, wherein a rendered glyph is represented by a plurality of device pixels, and wherein a selected rendering policy includes an initial adjustment value for adjusting density values of one or more of the plurality of device pixels.

13. A computer program product, tangibly stored on a computer-readable medium, for rendering a glyph to make the glyph more readable, comprising instructions operable to cause a programmable processor to:

receive a glyph associated with a font, the glyph to be rendered at a size;

calculate a set of initial density values to provide one density value for each of a set of device pixels to represent the glyph;

calculate an initial adjustment value for the glyph;

for one or more of the device pixels in the set of device pixels, calculate a length of an edge of the glyph that passes through the device pixel; and

for one or more of the device pixels, adjust the initial density value of the device pixel by a final adjustment value, the final adjustment value based upon the initial adjustment value and the length of the edge of the glyph passing through the device pixel.

14. The computer program product of claim 13, wherein instructions operable to calculate an initial adjustment value comprise instructions operable to:

determine a standard stem width for the font;

calculate a scaled stem width from the standard stem width and the size; and

determine an initial adjustment value based on the scaled stem width.

15. The computer program product of claim 13, wherein instructions operable to calculate an initial adjustment value comprise instructions operable to:

determine a horizontal standard stem width and a vertical standard stem width for the font;

calculate a horizontal scaled stem width from the horizontal standard stem width and the size and calculate a vertical scaled stem width from the vertical standard stem width and the size;

determine a horizontal initial adjustment value based on the horizontal scaled stem width and determine a vertical initial adjustment value based on the vertical scaled stem width; and

wherein the final adjustment value is based upon the horizontal initial adjustment value, the vertical initial adjustment and the horizontal and vertical lengths of the edge of the glyph passing through the device pixel.

16. The computer program product of claim 13, wherein for a stroke of the glyph that is to be asymmetrically adjusted, instructions operable to calculate an initial adjustment value comprise instructions operable to:

determine a standard stem width for the font;

calculate a scaled stem width from the standard stem width and the size; and

determine an initial adjustment value for a subset of device pixels forming an edge of the stroke based on the scaled stem width and the initial density values of the subset of device pixels.

17. The computer program product of claim 13, wherein instructions operable to calculate a length of an edge of the glyph that passes through the device pixel comprise instructions operable to:

render a high resolution bitmap representation of the glyph, the bitmap being

representative of the initial density values; and

identify initial adjustment pixels along the edges of the high resolution bitmap representation of the glyph, the initial adjustment pixels being high resolution pixels representative of the initial adjustment value of the glyph;

wherein the length of the edge of the glyph that passes through a device pixel is a ratio of the number of initial adjustment pixels in a direction to a grid ratio in a corresponding direction.

18. The computer program product of claim 17, wherein the glyph is to be rendered without carrying adjustment in a y direction and wherein the instructions operable to identify initial adjustment pixels include instructions to not identify initial adjustment pixels along an edge of the high resolution bitmap that coincides with a device pixel boundary in the y direction.

19. The computer program product of claim 17, wherein instructions operable to identify initial adjustment pixels along the edges of the high resolution bitmap include instructions operable to identify initial adjustment pixels in a neighboring device pixel to a device pixel having an initial density value equal to a maximum density value, where the neighboring device pixel has an initial density value of zero, the computer program product further comprising instructions operable to:

calculate a length of an edge of the glyph that passes through the neighboring device pixel; and

adjust the initial density value of the neighboring device pixel by a final adjustment value, the final adjustment value based on the initial adjustment value and the length of the edge passing through the neighboring device pixel.

20. The computer program product of claim 13, wherein the font is a Type 1 font.

21. The computer program product of claim 13, wherein the font is a TrueType font.

22. A computer program product, tangibly stored on a computer-readable medium, for rendering a stroke, comprising instructions operable to cause a programmable processor to:

receive a path representing a stroke to be rendered at a given stroke width;

calculate a set of initial density values to provide one density value for each of a set

of device pixels to represent the stroke;

calculate an initial adjustment value for the stroke;

for one or more of the device pixels in the set of device pixels, calculate a length of an edge of the stroke that passes through the device pixel; and

for one or more of the device pixels, adjust the initial density value of the device pixel by a final adjustment value, the final adjustment value based upon the initial adjustment value and the length of the edge of the stroke passing through the device pixel.

23. A computer program product, tangibly stored on a computer-readable medium, for rendering a stroke, comprising instructions operable to cause a programmable processor to:

receive a plurality of glyphs to be rendered; and

for each glyph, before rasterizing a representation of the glyph, use a scaled stem width of the glyph to select a rendering policy for rendering the glyph.

24. The computer program product of claim 23, wherein a rendered glyph is represented by a plurality of device pixels, and wherein a selected rendering policy includes an initial adjustment value for adjusting density values of one or more of the plurality of device pixels.

25. A system for rendering a glyph, the system comprising:

means for receiving a glyph associated with a font, the glyph to be rendered at a size;

means for calculating a set of initial density values to provide one density value for each of a set of device pixels to represent the glyph;

means for calculating an initial adjustment value for the glyph;

for one or more of the device pixels in the set of device pixels, means for calculating a length of an edge of the glyph that passes through the device pixel; and

for one or more of the device pixels, means for adjusting the initial density value of the device pixel by a final adjustment value, the final adjustment value based upon the initial adjustment value and the length of the edge of the glyph passing through the device pixel.

26. The system of claim 25, wherein means for calculating an initial adjustment value comprise means for:

determining a standard stem width for the font;

calculating a scaled stem width from the standard stem width and the size; and

determining an initial adjustment value based on the scaled stem width.

27. The system of claim 25, wherein means for calculating an initial adjustment value comprise means for:

determining a horizontal standard stem width and a vertical standard stem width for the font;

calculating a horizontal scaled stem width from the horizontal standard stem width and the size and calculating a vertical scaled stem width from the vertical standard stem width and the size;

determining a horizontal initial adjustment value based on the horizontal scaled stem width and determining a vertical initial adjustment value based on the vertical scaled stem width; and

wherein the final adjustment value is based upon the horizontal initial adjustment value, the vertical initial adjustment and the horizontal and vertical lengths of the edge of the glyph passing through the device pixel.

28. The system of claim 25, wherein for a stroke of the glyph that is to be asymmetrically adjusted, means for calculating an initial adjustment value comprise means for:

determining a standard stem width for the font;

calculating a scaled stem width from the standard stem width and the size; and

determining an initial adjustment value for a subset of device pixels forming an edge of the stroke based on the scaled stem width and the initial density values of the subset of device pixels.

29. The system of claim 25, wherein means for calculating a length of an edge of the glyph that passes through the device pixel comprise means for:

rendering a high resolution bitmap representation of the glyph, the bitmap being representative of the initial density values; and

identifying initial adjustment pixels along the edges of the high resolution bitmap representation of the glyph, the initial adjustment pixels being high resolution pixels representative of the initial adjustment value of the glyph;

wherein the length of the edge of the glyph that passes through a device pixel is a ratio of the number of initial adjustment pixels in a direction to a grid ratio in a corresponding direction.

30. The system of claim 29, wherein the glyph is to be rendered without carrying adjustment in a y direction and wherein the means for identifying initial adjustment pixels step include means for not identifying initial adjustment pixels along an edge of the high resolution bitmap that coincides with a device pixel boundary in the y direction.

31. The system of claim 29, wherein the means for identifying initial adjustment pixels along the edges of the high resolution bitmap include means for identifying initial adjustment pixels in a neighboring device pixel to a device pixel having an initial density value equal to a maximum density value, where the neighboring device pixel has an initial density value of zero, the system further comprising:

means for calculating a length of an edge of the glyph that passes through the neighboring device pixel; and

means for adjusting the initial density value of the neighboring device pixel by a final adjustment value, the final adjustment value based on the initial adjustment value and the length of the edge passing through the neighboring device pixel.

32. The system of claim 25, wherein the font is a Type 1 font.

33. The system of claim 25, wherein the font is a TrueType font.

34. A system of rendering a stroke, comprising:

means for receiving a path representing a stroke to be rendered at a given stroke width;

means for calculating a set of initial density values to provide one density value for each of a set of device pixels to represent the stroke;

means for calculating an initial adjustment value for the stroke;

for one or more of the device pixels in the set of device pixels, means for calculating a length of an edge of the stroke that passes through the device pixel; and

for one or more of the device pixels, means for adjusting the initial density value of the device pixel by a final adjustment value, the final adjustment value based upon the initial adjustment value and the length of the edge of the stroke passing through the device pixel.

35. A system comprising:

means for receiving a plurality of glyphs to be rendered; and

for each glyph, before rasterizing a representation of the glyph, means for using a scaled stem width of the glyph to select a rendering policy for rendering the glyph.

36. The system of claim 36, wherein a rendered glyph is represented by a plurality of device pixels, and wherein a selected rendering policy includes an initial adjustment value for adjusting density values of one or more of the plurality of device pixels.